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Mark Scheme (Results)

November 2012

GCSE Chemistry
5CH1F/01

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GCSE Chemistry 5CH1F/01 Mark Scheme – November 2012

Question Number	Answer	Acceptable answers	Mark
1(a)(i)	A gold		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(i)	carbon dioxide (1) iron (1)	carbon monoxide	**(2)**

Question Number	Answer	Acceptable answers	Mark
1(b)(ii)	loss of oxygen / oxygen is removed	gain of electrons ignore oxide removal	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(iii)	An explanation linking two of aluminium is high in reactivity (1) aluminium oxide is stable (1) (needs) powerful means (of reduction) / hard to extract (1) use electricity (1) aluminium not reduced by carbon (1)	 Allow higher than carbon carbon is not reactive enough accept other (cheaper) methods if qualified.	**(2)**

Question Number	Answer	Acceptable answers	Mark
1(c)	An explanation linking two of conserves {resources/ores} (1) reduces waste material (from extraction) (1) less damage to landscape / habitats (1) reduces landfill (1) less {copper/metal} goes to waste (1)	 will not run out of metals / copper accept cost/energy/pollution only if qualified (1) e.g. less energy to recycle than to extract from ore	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(a)(i)	C 21%		**(1)**

Question Number	Answer	Acceptable answers	Mark
2(a)(ii)	B photosynthesis in plants		**(1)**

Question Number	Answer	Acceptable answers	Mark
2(b)(i)	Any two from take care with heating/Bunsen burner (1) wear eye protection (1) wear lab coat (1) wear gloves (1) wear mask (1)	 tie long hair back ignore basic lab rules e.g. stand back, behave sensibly, don't throw things	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(b)(ii)	An explanation linking copper reacts with oxygen (1) to form copper oxide (1)	oxidation / oxidises copper + oxygen → copper oxide lhs (1) rhs (1) ignore absorbs ignore air	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(c)(i)	water	allow hydrogen oxide ignore H_2O reject hydroxide	**(1)**

Question Number	Answer	Acceptable answers	Mark
2(c)(ii)	Any one of the following points **only** produces water (1) does not produce carbon dioxide (1) water is harmless (1) conserves reserves of crude oil/fossil fuels (1) hydrogen is a renewable fuel/ora (1)	 less / no pollution reject less carbon dioxide ignore hydrogen can be reused ignore reference to cost	**(1)**

Question Number	Answer	Acceptable answers	Mark
3(a)(i)	to warn (of danger) / internationally recognised / so the correct precautions can be taken (1)	for people who cannot read / to show the acids are corrosive	**(1)**

Question Number	Answer	Acceptable answers	Mark
3(a)(ii)	corrosive	corrosion possible cq from (ai) ignore harmful / irritant / burns	**(1)**

Question Number	Answer	Acceptable answers	Mark
3(b)	B potassium hydroxide		**(1)**

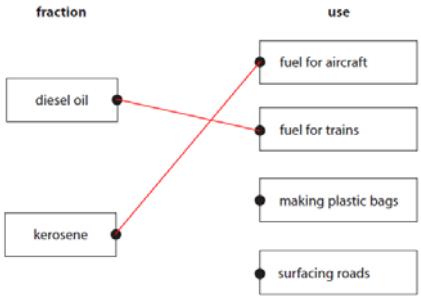
Question Number	Answer	Acceptable answers	Mark
3(c)	D sodium sulfate		**(1)**

Question Number	Answer	Acceptable answers	Mark
3(d)(i)	An explanation linking decomposing / breaking down of (compounds/substances) (1) using electrical energy / electricity /d.c. (1)	 splitting up ignore separate	**(2)**

Question Number	Answer	Acceptable answers	Mark
3(d)(ii)	chlorine	reject chloride ignore Cl_2	**(1)**

Question Number	Answer	Acceptable answers	Mark
3(d)(iii)	A description including use of lighted splint (1) hydrogen burns / (mixture of air and hydrogen) gives a 'pop' (1)	 pop test for 1 mark	**(2)**

Question Number	Answer	Acceptable answers	Mark
3(e)	oxygen	reject oxide ignore O_2	**(1)**

Question Number	Answer	Acceptable answers	Mark
4(a)	 Each correct line – 1 mark If more than one line drawn from a 'fraction' box, the 0 marks for that fraction diesel oil linked to fuel for trains (1) kerosene linked to fuel for aircraft (1)		**(2)**

Question Number	Answer	Acceptable answers	Mark
4(b)(i)	An explanation linking two of hydrocarbon (1) saturated (1) {all / only} single bonds / no multiple bonds / carbon carbon bonds are single (1)	a compound containing {carbon / C} and {hydrogen / H} **only** (1)	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(b)(ii)	ethene	reject eth**a**ne ignore C_2H_4	**(1)**

Question Number	Answer	Acceptable answers	Mark
4(b)(iii)	A description including (stays) orange with {W / alkane / ethane} (1) (turns) colourless with {X / alkene / ethene} (1)	does not change ignore clear ignore discolour if colour given for bromine water, accept brown/orange/yellow.	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(c)	B cracking		**(1)**

Question Number	Answer	Acceptable answers	Mark
4(d)	An explanation linking suitable use (1) related property (1)	Second mark is dependant on the first examples use: buckets / bowls (1) property: rigid / strong / shatterproof / waterproof(1) OR use: carpets / ropes /clothing (1) property: made into fibres / hard wearing / flexible(1) OR use: packaging / bags (1) property: strong / lightweight / non-toxic / waterproof (1) OR use: medical equipment (1) property: because it can be sterilised (without melting) (1)	**(2)**

Question Number	Answer	Acceptable answers	Mark
5(a)	An explanation linking two of layers / deposits of (1) sediment/sand/rock/dead (sea) creatures (1) (sediment is) {squashed/crushed/compacted / pressurised} (1) over (a long period of) time (1)		**(2)**

Question Number	Answer	Acceptable answers	Mark
5(b)	(presence of) fossils (1)	imprints ignore shells	**(1)**

Question Number	Answer	Acceptable answers	Mark
5(c)	{neutralise / react / remove} acid / soil is acidic	increase pH neutralise soil	**(1)**

Question Number	Answer	Acceptable answers	Mark
5(d)	A description including heat / high temperature (1) (high) pressure / compressed (1)	Ignore melting	**(2)**

Question Number		Indicative Content	Mark
QWC	***5(e)(i)**	A description including some of the following **Step A** heat limestone strong heat / with roaring Bunsen flame thermally decompose limestone to form calcium oxide and carbon dioxide allow to cool word eqn: calcium carbonate → calcium oxide + carbon dioxide bal eqn: $CaCO_3 \rightarrow CaO + CO_2$ **Step B** add water to calcium oxide calcium oxide swells/cracks/steams until in excess white solid dissolves in water filter mixture to remove unreacted calcium hydroxide colourless solution formed word eqn: calcium oxide + water → calcium hydroxide bal eqn: $CaO + H_2O \rightarrow Ca(OH)_2$	**(6)**
Level	**0**	No rewardable content	
1	**1 - 2**	a limited description e.g. strongly heat limestone the answer communicates ideas using simple language and uses limited scientific terminology spelling, punctuation and grammar are used with limited accuracy	
2	**3 - 4**	a simple description e.g. strongly heat limestone, then add water to the calcium oxide the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately spelling, punctuation and grammar are used with some accuracy	
3	**5 - 6**	a detailed description e.g. strongly heat limestone, carbon dioxide evolved, add water to the calcium oxide, colourless solution formed the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately spelling, punctuation and grammar are used with few errors	

Question Number	Answer	Acceptable answers	Mark
6(a)(i)	methane + oxygen → carbon dioxide + water lhs (1) rhs (1)	correct formulae in balanced or unbalanced equation (1) ignore heat	**(2)**

Question Number	Answer	Acceptable answers	Mark
6(a)(ii)	A description including two of carbon is soot (1) carbon makes things dirty(1) carbon damages lungs (1) carbon monoxide is toxic / poisonous (1) carbon monoxide reduces the amount of oxygen that can be carried by the blood (1) combines with haemoglobin / red blood cells (1)	kills people /makes people ill	**(2)**

Question Number	Answer	Acceptable answers	Mark
6(b)	A description including two of sulfur (impurities) (1) burn in {air / oxygen} (1) form sulfur dioxide / acidic fumes (1) dissolves in rain water (1)	Fossil fuels burn in {air / oxygen} (1) ignore references to carbon dioxide	**(2)**

Question Number		Indicative Content	Mark
QWC	***6(c)**	A description including some of the following processes releasing carbon dioxide burning fuels containing carbon / carbon in fuel reacts with oxygen in air respiration / sugars react with oxygen volcanic activity / one of gases produced when volcano explodes manufacturing processes producing gas decay of vegetable matter deforestation qualified processes removing carbon dioxide carbon dioxide is soluble dissolving in oceans incorporated into marine organisms forming carbonate rocks photosynthesis plants absorb carbon dioxide iron seeding fertilize and grow algae carbon dioxide capture conversion into hydrocarbons	**(6)**
Level	**0**	No rewardable content	
1	**1 - 2**	a limited description e.g. burning fossil fuels and respiration release carbon dioxide the answer communicates ideas using simple language and uses limited scientific terminology spelling, punctuation and grammar are used with limited accuracy	
2	**3 - 4**	a simple description e.g. carbon dioxide soluble in water dissolves in oceans and rain water, photosynthesis uses carbon dioxide for green plants to grow the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately spelling, punctuation and grammar are used with some accuracy	
3	**5 - 6**	a detailed description e.g. burning fossil fuels and respiration release carbon dioxide and photosynthesis uses carbon dioxide for green plants to grow the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately spelling, punctuation and grammar are used with few errors	

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